CLAIM AMENDMENTS

Claims 11-32 are pending; claims 1-10 have been canceled; claim 11 has been amended; and claims 20-32 are newly added.

Claims 1-10 (canceled)

11. (currently amended) An apparatus for providing public and private mobile communication service in a mobile communication system including public cell areas each having a corresponding public base station transceiver subsystem for communicating with mobile stations having access to a public mobile communication service, a plurality of public base station controllers for communicating with the public base station transceiver subsystems, a public mobile switching center for communicating with said public base station controllers and with a public switched telephone network and an integrated services digital network, said public mobile switching center being connected to a location register unit including a public home location register and a public visitor location register, said apparatus comprising:

public and private communication service unit for communicating with an Internet protocol network, one of said public base station controllers, said public switched telephone network and said integrated services digital network; and

a private base station transceiver subsystem for communicating with a mobile station within a common cell area in which said mobile station can communicate with a private mobile communication service and said public mobile communication service, wherein said mobile station

in said common cell area is registered in a private visitor location register included in said public and private communication service unit for enabling said mobile station in said common cell area to communicate with said private mobile communication service, and is further registered in at least one of said public home location register and said public visitor location register for enabling said mobile station in said common cell area to communicate with said public mobile communication service ~~The apparatus as set forth in claim 10~~, said public and private communication service unit comprising:

a call manager which is a main controller of the public and private communication service unit;

a private branch exchange connected to said public switched telephone network and said integrated services digital network; and

a first private base station controller for communicating with said mobile station within said common cell area, said public base station controller, said call manager and said private branch exchange.

12. (original) The apparatus as set forth in claim 11, said first private base station controller comprising:

a private communication interconnection network for analyzing a message type and origination addresses and termination addresses included in a received message, and then transmits the analyzed information via a communication path to one of said private base station transceiver subsystem, said public base station controller, said call manager and said private branch exchange;

and

a transcoder and selector bank for traffic data interfacing between said private branch exchange and said first private base station controller.

13. (original) The apparatus as set forth in claim 12, wherein said transcoder and selector bank performs a 2.048Mbps and 1.544Mbps non-multiple transmission channel interfacing function, a vocoder function for voice coding and decoding, a soft handoff control and voice selecting function, and a power control function.

14. (original) The apparatus as set forth in claim 12, said first private base station controller comprising an Internet protocol network interface board assembly module connected to the private communication interconnection network for controlling a wireless in-building data service and has a function of transmitting, to a local area network, packet data received from the mobile station in said common cell area, which uses a point-to-point protocol server and a TCP/IP (Transmission Control Protocol/Internet Protocol).

15. (original) The apparatus as set forth in claim 11, said call manager includes software blocks consisting of:

a data communication interface for interfacing communication between the private communication interconnection network and the call manager;

a message router for managing path designation for every message to be processed in the

private base station transceiver subsystem;

a second private base station controller performs as a main controller of the first private base station controller and controls the private base station transceiver subsystem;

a private mobile switching center for performing interfacing for interworking with the private branch exchange and for determining whether to process a requested service as the public mobile communication service or the private mobile communication service;

a private branch exchange mobile interface controller for controlling a wire and wireless complex function;

a short message service controller for managing a short message service control function and a short message service web server function;

a private visitor location register for managing the private mobile communication service-registered subscriber information, the private mobile communication subscribers location registration information, and various functional service information;

a wire service manager for managing the whole mobile communication service function provided from the public and private communication service unit; and

a local area network interface module for managing communication with the local area network.

16. (original) The apparatus as set forth in claim 15, wherein said message router designates a signaling message path for public and private call origination and termination services of the mobile station by consulting a router table therein, and designates a message path for a maintenance

service of the private base station transceiver subsystem.

17. (original) The apparatus as set forth in claim 16, wherein said message router determines whether a message to said call manager from said mobile station in said common cell area is a service request corresponding to an event stored in a router table disposed in said message router, and stores event information corresponding to one or more of a call origination service, a call termination service, a call transfer service, a call forwarding service, a wireless in-building data service, a wireless in-building short message service and a location registration service;

said message router performing a location registration service operation to enable said mobile station to receive the private mobile communication service in said common cell area, when it is determined that the message from said mobile station corresponds to said location registration service; and

wherein said message router transmitting a message to said mobile station in said common cell area to inform said mobile station that it is registered for the private mobile communication service in the common cell area.

18. (original) The apparatus as set forth in claim 17, wherein said location registration service operation comprises:

transmitting the message corresponding to said location registration service via a communication path from said message router to said public home location register and said public visitor location register, said communication path including said public base station controller in

communication with said public and private communication service unit and said public mobile switching center;

transmitting an acknowledgment message back to said message router via said communication path when it is determined that said mobile station is registered in one of said public home and visitor location registers for said public mobile communication service, said message router requesting said private visitor location register to analyze whether said mobile station in said common cell area is registered for said private mobile communication service;

determining whether the analysis performed by said private visitor location register indicates said mobile station in said common cell area is registered for said private mobile communication service;

transmitting a location registration request message from said message router to said private mobile switching center through said second private base station controller, wherein said second private mobile switching center registers the location of said mobile station in said private visitor location register.

19. (original) The apparatus as set forth in claim 15, wherein said wire and wireless complex function comprises:

informing a private mobile switching center of said public and private communication service unit that a call terminates at a wire extension terminal of a private branch exchange;

requesting, by said private mobile switching center, a private visitor location register to analyze whether there exists a mobile identification number of a private mobile communication

service-registered mobile station corresponding to the wire extension terminal;

determining, based on an analysis result obtained by said private visitor location register, whether the mobile identification number corresponding to the wire extension terminal exists for the private mobile communication service-registered mobile station;

ringing said wire extension terminal; and

transmitting a ring message to said private mobile communication service-registered mobile station, when it is determined that the mobile identification number corresponding to the wire extension terminal exists.

20. (new) A public/private mobile communication system for providing a public/private mobile communication service in association with a public land mobile network (PLMN) including a plurality of mobile stations (MSs), at least one mobile switching center (MSC), a plurality of public mobile communication network's base station controllers (BSCs) connected to the mobile switching center (MSC), and a plurality of public mobile communication network's base station transceiver subsystems (BTSs) connected to each of the base station controllers (BSCs), for forming a public-only cell area, the system comprising:

a public/private communication service unit connected to a particular one of the public mobile communication network's base station controllers (BSCs); and

at least one private base station transceiver subsystem (pBTS) connected to the public/private communication service unit, for forming a public/private common cell area;

wherein if a message received for a service requested by a particular one of the mobile

stations (MSs) is a public mobile communication service message, the public/private communication service unit provides a path designation to transparently transmit the received message to the public mobile communication network's base station controller (BSC) connected to the public/private communication service unit, and if the received message is a private mobile communication service message, the public/private communication service unit provides a path designation to a corresponding private mobile communication service.

21. (new) The public/private mobile communication system of claim 20, wherein the public/private communication service unit comprises:

a call manager for determining whether a message received for a service requested by a particular one of the mobile stations (MSs) is a public mobile communication service message or a private mobile communication service message, and providing the path designation according to the determination result; and

a communication path former for forming a communication path for a corresponding service under the control of the call manager.

22. (new) The public/private mobile communication system of claim 21, wherein the communication path former comprises:

a private branched exchange (PBX);

a transcoder & selector bank (TSB) for performing traffic data interfacing between the private branched exchange (PBX) and a private base station controller (pBSC); and

a communication network connector connected to the transcoder & selector bank (TSB), the call manager, the private base station controller (pBSC), the at least one private base station transceiver subsystem (pBTS) and the particular one of the public mobile communication network's base station controllers (BSCs), for analyzing an address of a received message and providing a data path and a communication path so that the received message should be transmitted to a node of the corresponding address.

23. (new) The public/private mobile communication system of claim 22, wherein the call manager comprises:

a main controller for controlling the private base station transceiver subsystem (pBTS) for the public/private mobile communication service and controlling the path designation according to the public/private mobile communication service;

a private visitor location register in communication with the main controller, for managing private mobile communication service-registered subscriber information and location registration information of a private mobile communication subscriber; and

a message router with a routing table to which path information corresponding to each of received messages is mapped, for designating a path of a received message by consulting the routing table.

24. (new) The public/private mobile communication system of claim 21, wherein the call manager further comprises a manager for maintaining and managing a mobile communication

service function provided by the public/private communication service unit.

25. (new) The public/private mobile communication system of claim 23, wherein the call manager further comprises a wire/wireless interface controller for interfacing with a wire private branch exchange (PBX) and a mobile terminal registered for the private mobile communication service.

26. (new) The public/private mobile communication system of claim 23, wherein the call manager further comprises a short message service (SMS) controller for controlling a short message service for a mobile terminal registered for the private mobile communication service.

27. (new) The public/private mobile communication system of claim 20, wherein the public/private communication service unit is connected to a public switched telephone network (PSTN), an integrated services digital network (ISDN), or an Internet protocol (IP) network.

28. (new) A method for providing a public/private mobile communication service in association with a public land mobile network (PLMN) including a plurality of mobile stations (MSs), at least one mobile switching center (MSC), a plurality of public mobile communication network's base station controllers (BSCs) connected to the mobile switching center (MSC), and a plurality of public mobile communication network's base station transceiver subsystems (BTSs) connected to each of the base station controllers (BSCs), for forming a public-only cell area, the

method comprising the steps of:

providing a public/private communication service unit connected to a particular one of the public mobile communication network's base station controllers (BSCs), and at least one private base station transceiver subsystem (pBTS) connected to the public/private communication service unit, for forming a public/private common cell area;

determining by the public/private communication service unit whether a message for a service requested by a particular one of the mobile stations (MSs) is received or not; and

providing path designation to transparently transmit a received message to the base station controller (BSC) connected to the public/private communication service unit, if the message received for the service requested by the mobile station (MS) is a public mobile communication service message, and providing path designation to a corresponding private mobile communication service if the received message is a private mobile communication service message.

29. (new) The method of claim 28, further comprising the step of registering a location of the mobile station so that the public and private mobile communication can be provided.

30. (new) A method of claim 29, wherein a step of registering a location of the mobile station further comprises the steps of;

upon receiving a location registration request from a mobile station, transmitting by the public/private communication service unit the location registration request to a public mobile communication network's base station controller (BSC) connected to the private base station

transceiver subsystem (pBTS), and determining whether the mobile station is registered for a private mobile communication service; and

registering a location of the mobile station in an internal private visitor location register by the public/private communication service unit, if the mobile station is not registered for the private mobile communication service.

31. (new) The method of claim 30, further comprising the step of determining whether a location registration complete signal has been received from the base station controller (BSC), before determining whether the mobile station is registered for the private mobile communication service.

32. (new) The method of claim 30, further comprising the step of informing the mobile station that the mobile station has been registered for the private mobile communication service, after the locating registration.